

Appl. No.: 09/975,492
Attorney Docket No.: 10906-007
Reply to Office Action of October 4, 2003

II. Amendments to the Claims

1. (Currently Amended) A clutch release bearing assembly adapted to engage a spring plate of a clutch assembly of a motor vehicle manual transmission to either push or pull the spring plate to release the clutch of the manual transmission, said clutch release assembly comprising:

a bearing carrier defining a central axis;

a bearing assembly supported on said bearing carrier, said bearing assembly including a stationary race, a rotatable race and a plurality of anti-friction elements disposed between said stationary race and said rotatable race adapted to support said rotatable race and to allow rotational movement of said rotatable race with respect to said stationary race; and

an aligning ring including a radial outer diameter and a front face mounted to said rotatable race, said aligning ring adapted for engagement with the spring plate of the clutch assembly;

said front face of said aligning ring defining a plane that is normal to the axis of said bearing carrier, said aligning ring having a convex spherical face and said rotatable race having a concave spherical face, said concave spherical face of said rotatable race engaging said convex spherical face of said aligning ring, wherein sliding movement of said concave spherical face of said rotatable race on said convex spherical face of said aligning ring allows limited angular displacement of said front face away from normal relative to said central axis of said bearing carrier;

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said rotatable race including an oil groove extending radially about said concave spherical face of said rotatable race to retain a lubricant that reduces friction between said concave spherical face of said rotatable race and said convex spherical face of said aligning ring.

16. (Currently Amended) A clutch release bearing assembly adapted to engage a spring plate of a clutch assembly of a motor vehicle manual transmission to either push or pull the spring plate to release the clutch of the manual transmission, said clutch release assembly comprising:

a bearing carrier defining a central axis;

a bearing assembly supported on said bearing carrier, said bearing assembly including a stationary race, a rotatable race and a plurality of anti-friction elements disposed between said stationary race and said rotatable race adapted to support said rotatable race and to allow rotational movement of said rotatable race with respect to said stationary race; and

an aligning ring including a radial outer diameter and a front face mounted to said rotatable race, said aligning ring adapted for engagement with the spring plate of the clutch assembly;

said front face of said aligning ring defining a plane that is normal to the axis of said bearing carrier, said aligning ring having a convex spherical face and said rotatable race having a concave spherical face, said concave spherical face of said rotatable race engaging said convex spherical face of said aligning ring, wherein sliding movement of

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said concave spherical face of said rotatable race on said convex spherical face of said aligning ring allows limited angular displacement of said front face away from normal relative to said central axis of said bearing carrier;

said rotatable race including an oil groove extending radially about said concave spherical face of said rotatable race to retain ~~The clutch release bearing assembly of claim 1 wherein said oil groove further includes an o-ring positioned therein.~~

17. (Previously Presented) The clutch release bearing assembly of claim 1 including a plurality of anti-friction elements disposed between said rotatable race and said aligning ring.

39. (Currently Amended) A clutch release bearing assembly adapted to engage a spring plate of a clutch assembly of a motor vehicle manual transmission to either push or pull the spring plate to release the clutch of the manual transmission, said clutch release assembly comprising:

a bearing carrier with a central axis;

a bearing assembly supported on said bearing carrier, said bearing assembly including a stationary race, a rotatable race and a plurality of anti-friction elements disposed between said stationary race and said rotatable race to support said rotatable race and to allow rotational movement of said rotatable race with respect to said stationary race;

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an aligning ring including a radial outer diameter and a front face mounted to said rotatable race, said aligning ring adapted for engagement with a spring plate of a clutch assembly;

said bearing assembly having an inner diameter and said bearing carrier having an outer diameter, said inner diameter and said outer diameter being sized such that there is a clearance fit between said bearing assembly and said bearing carrier to allow limited radial shifting of said bearing assembly with respect to said bearing carrier;

said front face of said aligning ring defining a plane that is normal to said central axis of said bearing carrier, said rotatable race having a concave spherical face and said aligning ring having a convex spherical face, said concave spherical face of said rotatable race engaging said convex spherical face of said aligning ring, wherein sliding movement of said concave spherical face of said rotatable race on said convex spherical face of said aligning ring allows limited angular displacement of said front face away from normal relative to said central axis of said bearing carrier;

said rotatable race including an oil groove extending radially about said concave spherical face of said rotatable race to retain a lubricant that reduces friction between said concave spherical face of said rotatable race and said convex spherical face of said aligning ring.

42. (Currently Amended) A clutch release bearing assembly adapted to engage a spring plate of a clutch assembly of a motor vehicle manual transmission to

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either push or pull the spring plate to release the clutch of the manual transmission, said clutch release assembly comprising:

a bearing carrier with a central axis;

a bearing assembly supported on said bearing carrier, said bearing assembly including a stationary race, a rotatable race and a plurality of anti-friction elements disposed between said stationary race and said rotatable race to support said rotatable race and to allow rotational movement of said rotatable race with respect to said stationary race;

an aligning ring including a radial outer diameter and a front face mounted to said rotatable race, said aligning ring adapted for engagement with a spring plate of a clutch assembly;

said bearing assembly having an inner diameter and said bearing carrier having an outer diameter, said inner diameter and said outer diameter being sized such that there is a clearance fit between said bearing assembly and said bearing carrier to allow limited radial shifting of said bearing assembly with respect to said bearing carrier;

said front face of said aligning ring defining a plane that is normal to said central axis of said bearing carrier, said rotatable race having a concave spherical face and said aligning ring having a convex spherical face, said concave spherical face of said rotatable race engaging said convex spherical face of said aligning ring, wherein sliding movement of said concave spherical face of said rotatable race on said convex spherical face of said aligning ring allows limited angular displacement of said front face away from normal relative to said central axis of said bearing carrier;

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said rotatable race including an oil groove extending radially about said concave spherical face of said rotatable race to retain ~~The clutch release bearing assembly of claim 39 wherein said oil groove further includes an o-ring positioned therein.~~

43. (Original) The clutch release bearing assembly of claim 39 wherein said bearing carrier includes a first end and a second end, a first snap ring groove extending radially about said outer diameter adjacent said first end, a first snap ring disposed within said first snap ring groove, a washer attached to said second end and a support sleeve extending over said bearing carrier adjacent said washer, wherein said stationary race is disposed between said support sleeve and said first snap ring and thereby held in a fixed axial position.

44. (Original) The clutch release bearing assembly of claim 43 wherein said first snap ring is a spring washer having a plurality of layers of a helically wound serpentine strip of resilient material.